

Running head: STUDENT TEACHER CANDIDATES' EFFECT

Student Teacher Candidates' Effect on Student Learning
As Measured Through Action Research Projects

David W. Moffett

Barbara K. Reid

Yunfang (Molly) Zhou

Brewton-Parker College

Paper presented at the 2008 annual meeting of the Georgia Educational Research Association, Savannah, Georgia, October 24, 2008.

Abstract

The unit determined that “Assessment 5: Effect on Student Learning” would be best measured by student teachers and interns utilizing an action research activity in their clinical experience. Twenty four action research projects were evaluated by the Director of Student Teaching. Interraters blind to the Director’s scores evaluated the projects. Projects possessing a difference in score greater than 10 percent between the Director and Interrater were evaluated by a second Interrater. An Alpha Cronbach reliability test revealed the alpha coefficient for the Student Teaching Director and the first Interrater was .40 and .53 for the Director and the second Interrater. The same test was applied to the first Interrater and second Interrater and the alpha coefficient was found to be .74. The first term of Action Research projects were generally of poor quality and the scoring across raters was unreliable. These data informed recommendations including modifications in the assignments and more training for scorers.

Student Teacher Candidates' Effect on Student Learning as Measured Through Action Research Projects

The education unit has eight assessments that drive its assessment system. Assessment five is known as student teacher effect on student learning. In the summer of 2007 the Education Division faculty invested the summer in reviewing and revising unit assessments. The assessment system was not useful and data derived were not informing the unit.

Over the course of six months a new assessment five emerged. After considerable deliberation and research on best practices in measuring student teacher effect on student learning, the first generation of the current model was applied to the unit's clinical practices in the spring term of 2008.

Herein you will receive an overview of literature related to student teachers utilizing Action Research and information regarding student teacher effect on student learning. Then, methodology for the first term of the study is shared. Data derived from the study are then shared and discussed. Ultimately recommendations, reflective of revisions already made resulting from data derived from the first term of assessment, are offered for consideration.

Literature Review

How can we best measure candidate's effects on student learning and what effects do student teachers have on student learning? First, there must be an adequate data collection system. Also, what is the assurance that student teachers will alter practices based on the data they glean? Will data derived alter instruction provided by the candidates? How will we know? Finally, how can we cause this data to occur naturally so it is not merely an add-on to the already overwhelmed candidate and overworked education faculty? The sheer number of candidates going through teacher education programs can add to the maelstrom when trying to determine

effect on learners. Determining the effect of student teachers on student learning can be very problematic (Ada and Balach, 2007).

The best answer to how one can determine student teacher effect on student learning seems to be the careful implementation of Action Research in the classroom by the student teacher. Action Research provides candidates with tools of systematic inquiry and beginning investigation skills, while providing the needed measuring stick to determine effect on student learning (Emery, Jumper, and Bruce, 2007). Such research has not been apparent at the undergraduate level in teacher education programs. It has been traditionally housed in graduate programs, often as the capstone, but it does have a place in candidate clinical practice. Candidates formulate hypotheses in regards to their effect on student learning as student teachers and then test this hypothesis by implementing unit guided Action Research in their clinical practice classroom(s).

In establishing an Action Research project for all student teachers we must be able to articulate to faculty and students what it is and what it is not (Ross-Fisher, 2008). Without proper clarity the undertaking of such an endeavor can easily go off the proverbial tracks. Action Research is not experimental and it is often messy and uncertain (Goodnough, 2008). It is the responsibility of the education unit to ensure that the research projects don't become too messy or uncertain.

Again, what candidates incidentally learn from performing Action Research can cause them to feel as though they have a greater understanding of the big picture of what it means to be a professional educator. It offers candidates a professional identity they often don't possess without engaging in such research, and it cultivates professional relationships and development (Warren, Doorn, and Green, 2008).

Candidates engaged in student teaching have a view of day to day classroom operations like few researchers can possess. Life in the teaching trenches offers candidates the opportunity to develop unique strategies for meeting individual student needs. However, teachers have been historically reluctant to engage in research (Nonis, 2008). As education faculty, it is our responsibility and duty to instill in our candidates the expertise and initiative to be action researchers. Candidates should come to feel a sense of duty to research their classroom often and guide them with the data received.

Student teachers should engage in Action Research since they can experience success in it, which will lead to subsequent research attempts beyond their clinical experience. Student teachers who struggle with the daily realities of the clinical experience are the ones who probably need to internalize the results of Action Research most. However, they will be the ones who will most likely have the greatest difficulty implementing the research and deciphering the results that can ultimately improve their teaching (Monroe, 2007). This is only one of several conundrums we face in trying to adequately equip and prepare candidates to become exemplary educators.

Once student teachers collect and analyze the data garnered from Action Research where do they go from there? After all, how long do teacher effects persist anyway? In one study teacher effects on student learning are defined as, “teacher specific residuals adjusted for student and treatment effects” (Konstantopoulos, 2007). Considering all of the variables that affect student learning, what is the effect size of teacher effect on student learning? Per the study teacher effect is cumulative and the effects are evident beyond the current candidate/student experience. It would appear as though longitudinal studies hosted by the unit would be appropriate to best capture teacher effect on student learning, if this is the case. In other words

candidates may well not see the total effect on student learning through their Action Research snapshot view of student learning. Still, our candidates should conduct Action Research and not speculate beyond the collected data, other than to recommend that their effect on students be studied across subsequent student years in school to capture total effect size.

Teachers as researchers can at least partially address the need for interventions intended to improve student performance in the classroom. Self intervention can result from analyzing data collected by classroom teachers in their research. This value added self-assessment has the potential for resulting in teachers selecting professional development in areas they determine to be in need of improvement. Such intervention has promise for translating into continued, positive effects on student learning for several years, especially in students' early grades (McCaffrey, Lockwood, Mariano, and Sedodji, 2005).

Historically, there have been calls for studies on teacher effect on student learning. Effect on student learning includes the amount of student time on-task and this is correlated with effect on student learning and candidate characteristics (Fox, 1978). Candidate characteristics do indeed affect student learning. Empowering candidates to analyze their effect on student learning through Action Research can encourage reflective practice and incite personal, positive changes in pedagogy and practice.

Methodology

The study began in the spring term of the 2007-2008 academic year. Twenty-four student teachers were assigned the task of completing prescribed Action Research projects in their assigned classroom(s). The primary study investigator met with the student teachers at the beginning of the term to review the multiple step research process that was to be implemented.

The steps included drafting a 10 day unit plan of instruction, developing and administering a pretest reflective of the content of the unit plan early in the term, analyzing the results of the pretest and revising the draft unit plan as needed, teaching of the 10 day unit plan, and administering a unit grand assessment with the pretest embedded therein.

One of the secondary investigators, who served as director of student teaching, oversaw candidate Action Research progress across the term. Some non-Action Research assignments were due across the semester as well and were listed in the calendar. However, everything pertaining to the Action Research project was due at the end of the term. Instructions for the Action Research project were embedded within the unit's 10 outcomes and were very broad. Instructions for the research were contained in the following:

E-NOTEBOOK GENERAL DIRECTIONS

These directions apply to all Discussion Board Forum assignments. You should complete all assignments for each discussion forum/outcome in Blackboard and save as a Microsoft Word document. Candidates should be prepared to provide supervisors with hard copies when requested. All assignments should be completed directly in the forum and submitted as attachments only when directions indicate that text is too big or if otherwise directed.

Use the activity name listed as the title. Be sure to follow all directions and formats provided during Senior Seminar, in Handbooks, and in Course Documents in Blackboard. You are allowed to revise submissions so be sure that assignments are included only once. Be sure to post assignments and responses in the appropriate place so that discussion threads will align appropriately for viewing. Supervisors may be using Blackboard submissions for final grading. Appropriate thread alignment will insure that assignments are not overlooked. Time will not allow for supervisors to search for assignments not properly aligned.

You should provide comments (two different classmates each forum) for each of the assignments which have been starred. Some of the individual assignments include directions for comments. Be sure to include these. Be sure to include assignment title in comments. Comments should be based on quality, correctness, creativity, relevance to the assignment, and include your personal observations.

Senior Seminar Activities

1. One-day Lesson Plan*
2. Classroom Management Activity*
3. Resume Format and Sample
4. Code of Ethics Activity
5. Problem Solving / Creative and Critical Thinking Activity
6. Rubric Construction Activity *
7. Assessment #3, 4, 6 Electronic Templates
8. Digital Video Recording

BPC Outcome #1- understands and demonstrates knowledge of learner characteristics.

PAAR Summary
 Standards Table
 Class Description Activity
 Learning/Teaching Styles Inventory*
 Student Artifact*

BPC Outcome #2 - . develops lesson plans using technology and a variety of instructional methods

Standards Table
 Lesson Plans – Attach as separate days
 PowerPoint Activity*
 Smartboard Activity*
 Teaching Video
 Teacher-Made Supplemental Materials (2)*
 Student Artifact

BPC Outcome #3 - . demonstrates mastery of content.

Standards Table
 GACE Scores
 Transcript(s)
 Student Artifact
 Video

BPC Outcome #4 - promotes creative and critical thinking

Standards Table
 Creative Thinking Activity and Artifact*
 Critical Thinking Activity and Artifact*

BPC Outcome #5 - demonstrates proficiency in writing and expression

Standards Table
 Newsletter – (Microsoft Word, Word Art, Clip Art/Picture)*
 Design Thank You Note*
 Candidate Selected Artifact

BPC Outcome #6 - utilizes formal and informal methods and assessments

Assessment #5 Effect on Student Learning – Participatory Action Research*
 Candidate Developed Rubric (may be for any assessment/activity)*
 Clinical Faculty Final Evaluations (Planning, Performance, Dispositions)
 School Faculty Evaluations (Planning, Performance, Dispositions)
 Candidate Dispositions Self Assessment
 Teacher Education Program Evaluation
 Student Artifact and completed rubric from above

BPC Outcome #7 - demonstrates an understanding of student diversity

Standards Table
 Differentiated Group Activity – Artifact*
 Special Needs Accommodation – Artifact*
 Learning Styles Inventory – Artifact
 Example of tables from #6*

BPC Outcome #8 - promotes motivation and positive social interaction

Standards Table
 Grade Book Program – Artifact*
 Games/ Awards/Certificate – Artifact*
 Classroom Management Activity (see course documents)
 Classroom Management Plan

BPC Outcome #9 - evaluates performance and continues to grow professionally

Standards Table
 Reflective Paper
 Professional Development Artifact*
 Sample Lesson Plan Reflection
 Resume
 Student Teaching Log (see handbook in course documents)

BPC Outcome #10 - possesses a Christian disposition toward school, local, state, nation, and

[world while reinforcing](#)

Standards Table

Dispositions Self Assessment

Community Involvement Summary Table (see course documents)*

Georgia Code of Ethics Activity

[Student Discussion Board](#)

You may share ideas, thoughts, questions, etc. with one another in this forum.

At the end of the term the director of student teaching printed the twenty-four Action Research projects from the electronic learning management system used in student teaching. The director and other education faculty members, serving as interraters, had devised a 10 part evaluation instrument. Each of the 10 parts of the evaluation tool had a possible value of 3 points. The total possible points that could be awarded to an Action Research project were 30.

The director of student teaching scored all twenty-four candidate projects. Then, interraters were randomly assigned to score the projects, blind to the director of student teaching scores. In cases where the scores across the director and interraters possessed a difference of 10 percent or more a second interrater, blind to both the director's score and the first interrater's score, evaluated and scored the project. Second interraters were randomly assigned to score projects just as initial interraters were randomly assigned.

Results

Twenty-four student teachers participated in the assessment five Action Research project in its inaugural term, spring 2007-2008. Twenty-four action research projects were rated by the director of student teaching. Then, the projects were randomly assigned to other education division faculty interraters. Ten projects were interratered for a second time randomly by five of the faculty interraters who had not previously evaluated the particular projects. These ten

projects were interratered for a second time because the difference between the director of student teacher's score and first interrater score was greater than ten percent of possible project points. All five second round interraters participated in the first round of interratering, but again the projects scored in round two were not scored by them in the first round. The total and mean of all the participants of the study by the rater were 317 and 13.31 respectively. The total and mean of all participants after the first round interratering were 315 and 13.13. The total and mean after the second round interratering for all participants were 276 and 11.50. As indicated by the data from the second round of interratering, eight of ten action research projects continued to possess a score difference greater than ten percent. This difference can be explained in several ways but it is most likely the result of more training being needed in scoring the projects. Between the second scores and the first, four of the ten score differences were larger than in the first round. The total difference between the director of student teaching and the first interraters was -2, while the total difference between the director and the second interraters was -41. The total difference between round one interrater scores and the second round of interrater scores was -39. An alpha cronbach reliability test revealed the alpha coefficient for the student teaching director and the first interrater was .40 and .53 for the director and the second interrater. The same test was applied to the first interrater and second interrater and the alpha coefficient was found to be .74.

Table 1

Descriptive statistics of the scores by the rater, first interater, and the second interater

Scorer	Number	Mean	sd	Total
Student Tch				
Director	1	13.21	4.37	317
First				
Interrater	6	13.13	4.05	315
Second				
Interrater	5	11.5	4.63	276

note. N = 24

Table 2

The difference means, difference totals, and alpha coefficients between the rater and the interater

Differences	Mean	Total	Alpha Coefficient
Between the rater and the first interater	-0.08	-2	0.40
Between the rater and the second interater	-1.71	-41	0.53
Between the first and second interater	-1.63	-39	0.74

note. N = 24

Analysis of Data

Results were somewhat confounding on at least two levels. Overall quality of the Action Research projects was poor with the mean below fifty percent of points possible. Perhaps this could be attributed to it being the initial attempt of implementing such a project in student teaching. Or, it could be that the expectations were not as clear as they needed to be. Or, the fact that the entire project did not have to be submitted until the end of the term may have had something to do with the low performance. Whatever the case or reason the projects for the most part did not meet unit expectations.

A second area of concern was the lack of reliability across scores given by the director of student teaching and the interraters. The alpha cronbach reliability needed was not evident across director scores and those of the interraters. It can be speculated that the director was privy to subjective information regarding particular candidates and factored that knowledge into the scoring of the projects, while the interraters had no knowledge of information beyond the projects themselves. In other words the director's scores may have included data that the interraters could not see when they scored the projects. To further defend this hypothesis, the

reliability scores across interraters was very close to being at an acceptable rate to ensure reliability, while the discrepancy between director scores and interrater scores was remarkable.

Conversely the mean scores across director and first interraters were amazingly similar. On a thirty point scale the mean difference was less than one-tenth of one point. Still, the standard deviations were four or higher. This dissonance between the mean scores and standard deviations caused the investigators to greatly appreciate having more than one way of seeing the data. Had the investigators only evaluated differences between mean scores they would not have comprehended the considerable differences within test scores between the director and interrater scores.

In summary, the Action Research projects generated by the candidates in the first term of the study were not satisfactory. Secondly, there was no reliability across director and interrater scores thereby negating the assurance needed that the projects were scored in satisfactory and meaningful ways. Therefore, the data derived were not sufficient to inform the unit other than to cause it to revise the student teacher Action Research projects in substantial ways.

Much needs to be done to improve the clarity of expectations for the projects and the reliable scoring of them.

Recommendations

In the current term (Fall, 2008) much is being done to attempt to secure better projects and more reliable scoring. A report outline is now evident in the electronic learning management system that houses the instructions for the Action Research projects. Also, a grading rubric has been developed and shared with the candidates. It is very specific as to what must be included and it articulates the desired organization method of the project. The primary investigator checked for candidate understanding in more meaningful ways when presenting the Action

Research project to them at the beginning of the term. The director who oversees the projects now possesses a clearer understanding of the concept of Action Research and is able to provide greater clarity regarding project expectations to the candidates in the second attempt.

Additionally, each step of the Action Research project is being turned in along the way and these are being evaluated by the student teaching director. If the director finds any portion of the project submitted to be unsatisfactory the candidate must revise and resubmit that particular portion before proceeding. Now candidates see the following instructions online:

Action Research – Effect on Student Learning Candidate Report

Personal Information:

Candidate's Name	Campus	Semester	Program

Student Teaching Information:

School	System	Clinical Supervisor	School Faculty Supervisor

Directions:

Complete your action research report using this template. Complete the information above and include this page in your report. You will be submitting the elements of your report on different dates across the semester. Be sure to check the due dates on your course calendar. Submit hard copies of individual sections when they are due and place copies in Blackboard. You will submit a completed hard copy of the entire report at the end of the semester (check date in course calendar). Number the pages of your report.

Grading:

Individual Sections: The individual elements will be graded as they are due (see rubric in course documents). You may revise and update the report sections until the due date. Once the report section has been graded that grade will be final. Any report sections receiving a grade of D or F (Unacceptable) must be revised and resubmitted. Individual sections will not be re-graded but revisions will be considered in determining your unit's

total effect on student learning. Your individual report sections will be graded by the Clinical Supervisor, School Faculty Supervisor, and Director of Student Teaching.

Final Report: Your total Action Research grade will include the previous grades on all individual sections and a summative grade reflective of your unit's total effect on student learning (see rubric). This grade will be determined through the tests, procedures, data, and data analysis presented in your report as well as the mechanics of grammar, spelling, punctuation, and format (APA). Semester grades will not be posted until an acceptable report has been submitted.

Action Research Your Name

- I. **Class Description**

- II. **Draft Standards-Based 10-Day Unit Plan**
 - Title Page
 - Learning Objectives aligned with standards
 - Lesson format according to BPC teaching model
 - Appendix (handouts, quizzes, PowerPoints, assessments)

- III. **Pretest**
 - Students assigned random I.D. #s
 - Questions relevant to unit
 - Appropriate number of questions
 - Appropriate format
 - Appropriate readability level (reading level _____)
 - Test administrator procedures/conditions

- IV. **Pretest Results and Analysis**
 - Appropriate analysis methods
 - Results clear and concise
 - Charts, graphs, tables

- V. **Summary of Changes and Revisions to Unit**
 - Additions, deletions, revisions of lessons based on pretest results
 - Special Needs
 - Differentiated Instruction
 - Additions, deletions, revisions of assessments

- VI. **Revised Standards-Based Unit Plan**

- VII. **Posttest**
 - Pretest questions embedded in posttest

- Appropriate number of questions
- Appropriate format
- Appropriate readability level
- Test administrator procedures/conditions



VIII. Posttest Data Analysis and Interpretation

- Aggregated class-wide results (gains/losses) included
- Disaggregated results student by student (by student ID #s)
- Charts, graphs, tables included
- Summary Analysis and Interpretation

IX. Reflection

X. Appendix

Education 474-475 Student Teaching
Blackboard Discussion Board

 Forum  Search 	
Display Order 1	Forum <u>STUDENT TEACHING PERFORMANCE ASSESSMENTS</u>

You should complete all assessments for each discussion forum in Blackboard and save on a jump/finger drive or disk as a Microsoft Word document. Students will provide hard copies to supervisors. All assessments should be completed directly in the forum and submitted as attachments only when directed.

Use the activity name listed as the title. You are allowed to revise submissions up until the due date. Be sure that assessments are posted only once. Be sure to post assessments and responses in the appropriate place so that discussion threads align appropriately for viewing. Supervisors will be using Blackboard submissions for final grading. Appropriate thread alignment will insure that assessments and comments are not overlooked. Time will not allow supervisors to search for assignments not properly aligned and/or titled.

You should provide comments when directed. Comments should be based on quality, correctness, relevance to the assignment. Include your

personal observations.

2

PERSONAL INFORMATION AND DOCUMENTATION FORMS

*Personal Information
PAAR Information Form:
Proof of Insurance:
Background Check:
Autobiography:
GACE Score Reports;
Transcripts:*

3

AUGUST EXPERIENCE VERIFICATION AND DAILY LOG

*August Experience Verification Form
August Experience Daily Log*

4

PERFORMANCE ASSESSMENT ALIGNMENT (BPC Outcomes/Standards)

To be completed across semester. Form provided in Course Documents.

5

ACTION RESEARCH - SECTION 1 ***DUE OCTOBER 2***

*Draft of 10-Day Unit Plan
Class Description
Pretest
Pretest Results and Analysis*

6

ACTION RESEARCH - SECTION II

DUE OCTOBER 17
*Summary of Changes and Revisions to Unit
Revised Standards-Based Unit Plan*

7

ACTION RESEARCH - SECTION III

DUE NOVEMBER 28

Posttest

Posttest Data Analysis and Interpretation

8

CANDIDATE 10-DAY ACTIVITIES / ARTIFACTS

DUE NOVEMBER 6

PowerPoint

Smart Board Activity

Three-Column Newsletter

Electronic Grade Book Sample

Professional Development

Resume

Classroom Management Plan

Code of Ethics Activity

9

CANDIDATE ACTIVITIES / STUDENT ARTIFACTS

DUE NOVEMBER 13

Teacher-Made Supplemental Materials

Creative/Critical Thinking Activity

Learning Styles Inventory

Candidate Developed Rubric

Awards Certificate

10

EVALUATIONS

DUE NOVEMBER 28

(Use directions for adding multiple images)

Clinical Faculty Evaluations

-3 - Performance

-3 - Daily Planning

-1 - 10-Day Lesson Plan Assessment

-2 - Dispositions

-1 - Action Research Rubric

School Faculty Evaluations

-3 - Performance

-3 - Daily Planning

-1 - 10-Day Lesson Plan Assessment

-2 - Dispositions

Candidate Dispositions Self Assessment

-2 - Beginning and End

Teacher Education Program Evaluation

-1 - (End of Semester)

11

STUDENT TEACHING DAILY LOG

DUE NOVEMBER 28

12

STUDENT TEACHING VIDEO

DUE NOVEMBER 28

13

ACTION RESEARCH REPORT - EFFECT ON STUDENT LEARNING

***DUE DECEMBER 5
EVERYTHING COMPLETED IN BLACKBOARD
HARD COPIES OF E-NOTEBOOK DUE DECEMBER 8***

14

COMMENTS

*Senior Seminar Comments and Activities
Action Research Section I
Action Research Section II
Action Research Section III
Classroom Management Plan
Code of Ethics Comments*

15

APPENDIX

16

TEACHER EDUCATION PORTFOLIO - REQUIRED DOCUMENTS

Required Documents - Teacher Education Portfolio

- 1. Personal Information***
- 2. PAAR (Demographics) Information Form***
- 3. Proof of Insurance***
- 4. Background Check***
- 5. GACE Score Reports***
- 6. Transcripts***
- 7. August Experience Verification Form***
- 8. August Experience Daily Log***
- 9. PowerPoint***
- 10. Smart Board Activity***
- 11. Professional Development***
- 12. Learning Styles Inventory***
- 13. Candidate Developed Rubric***

14. Evaluations:***Clinical Faculty Evaluations******3 - Performance******3 - Daily Planning******1 - 10-Day Lesson Plan Assessment******2 - Dispositions******1 - Action Research Rubric******School Faculty Evaluations******3 - Performance******3 - Daily Planning******1 - 10-Day Lesson Plan Assessment******2 - Dispositions******Candidate Dispositions Self Assessment******2 - Beginning and End******Teacher Education Program Evaluation******1 - (End of Semester)*****15. Action Research Report**

Additional scoring training for the director and the interraters is also planned, to attempt to reach acceptable levels of reliability. All scorers must come to know that they only score what is visible to all of those who are doing the scoring. This should reduce the discrepancies evident in the first term of the project scoring.

The investigators are hopeful that the added clarity provided to the candidates and additional training of scorers of the Action Research projects will cause the projects to become valuable artifacts that can provide data leading to decisions that will improve the unit.

References

- Emery, M., Jumper, J., & Bruce, R. (2008, February). *Transformational Teachers: Undergraduate Candidates Become Change Agents by Designing and Implementing Action Change Projects*. Paper presented at the annual meeting of the American Association of Colleges for Teacher Education, New Orleans, LA. Retrieved October 21, 2008, from http://www.allacademic.com/meta/p207369_index.html
- Emery, M., Jumper, J., & Bruce, T. (2007, February). *Transformational Teachers: Undergraduate Education Teacher Candidates Assessing Their Impact on Student Learning Through Action Research*. Paper presented at the annual meeting of the American Association of Colleges for Teacher Education, New York, NY. Retrieved October 21, 2008, from http://www.allacademic.com/meta/p142785_index.html
- Fox, R. (1978, August). *Tracing Teacher Effects Through Student Behavior to Learning Outcomes*. Paper presented at the Annual Meeting of the American Psychological Association, Toronto, Canada. Retrieved October 21, 2008, from http://eric.ed.gov/ERICWebPortal/custom/portlets/recordDetails/detailmini.jsp?_nfpb=true&_ERICExtSearch_SearchValue_0=ED169039&_ERICExtSearch_SearchType_0=no&accno=ED169039
- Gay, L., Mills, G., & Airasian, P. (2009). *Educational research: Competencies for analysis and applications* (9th ed.). Upper Saddle River, NJ: Pearson Education, Inc.
- Goodnough, K. (2008). Dealing with messiness and uncertainty in practitioner research: The nature of participatory action research. *Canadian Journal of Education*, 31(2), V-VI.
- Holly, M. L., Arhar, J., & Kasten, W. (2005). *Action research for teachers: Travelling the yellow brick road* (2nd ed.). Upper Saddle River, NJ: Pearson Education, Inc.

References Continued

- Konstantopoulos, S. (2007). How long do teacher effects persist (No. 2893)? Bonn, Germany: IZA.
- Monroe, E. E., Gali, K., Swope, K., & Perreira, I. (2007). Preservice teachers' use of action research to implement alternatives to round robin reading. *Journal of Reading Education*, 32 (2), 13-17.
- Nonis, K. P. (2008). Breaking barriers: Building research partnerships between special education teachers and universities in action research in Singapore. *The Journal of the International Association of Special Education*, 9(1), 28-37.
- Ross-Fisher, R. (2008). Action research to improve teaching and learning. *Kappa Delta Pi*, 44 (4), 160-164.
- Stringer, E. (2004). *Action research in education*. Upper Saddle River, NJ: Pearson Education, Inc.
- Warren, S., Doorn, D., & Green, J. (2008). Changes in Vision: Teachers Engaging in Action Research. *The Educational Forum*, 72(3), 260-270.
- Williams, A., & Balach, C. (2007, February). *Building Capacity Through Teacher Candidate Action Research: Documenting Teacher Candidate Ability to Positively Impact Student Learning*. Paper presented at the annual meeting of the American Association of Colleges for Teacher Education, New York, NY. Retrieved October 21, 2008, from http://www.allacademic.com/meta/p142771_index.html